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(71) Applicant: **CANON INC**

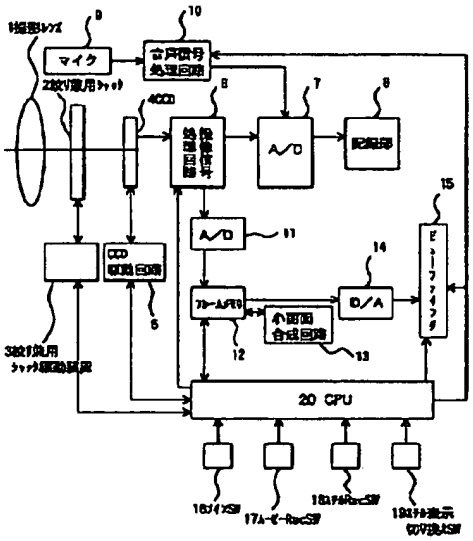
(72) Inventor: **FUJII TAKASHI**

(54) IMAGE PICKUP DEVICE

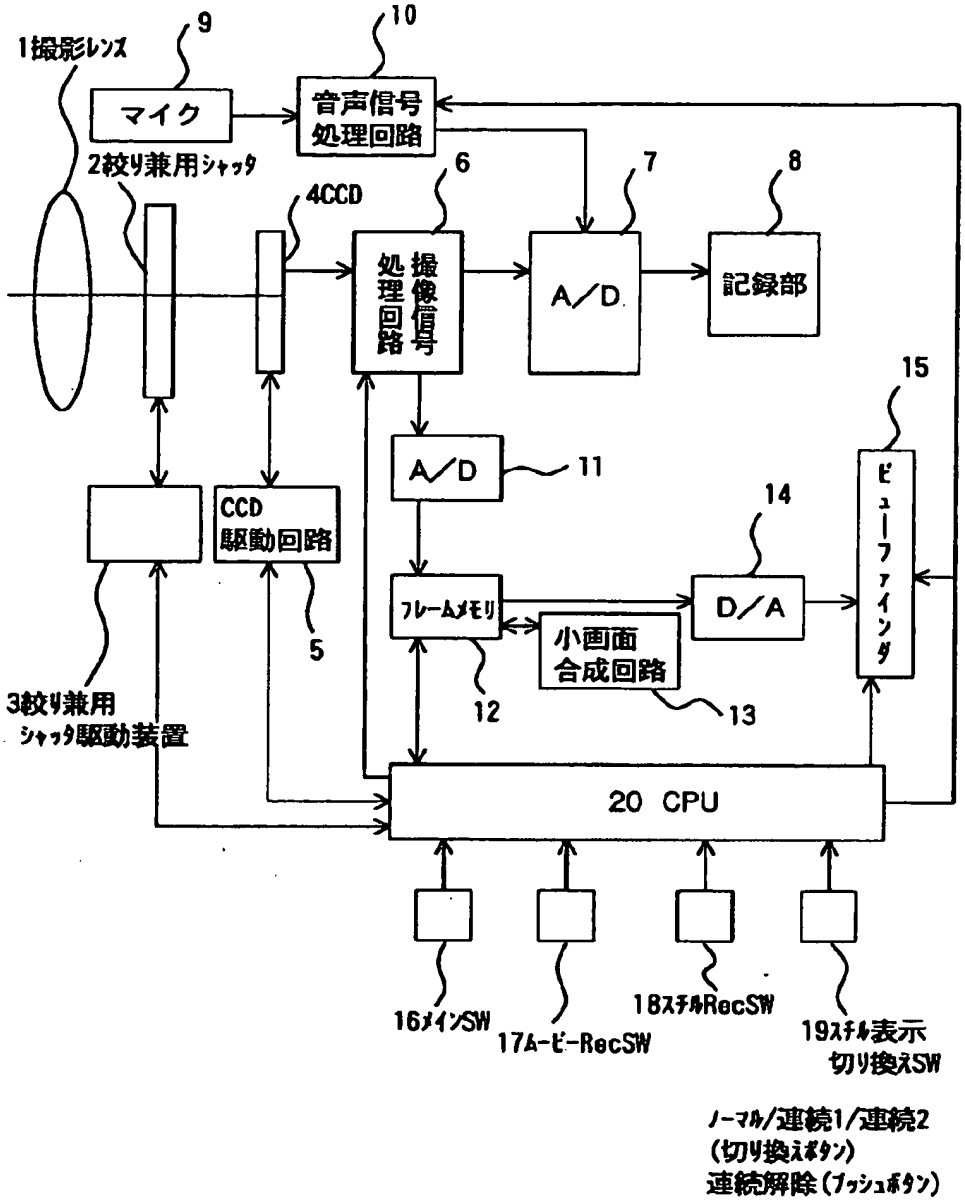
(57) Abstract:

PURPOSE: To confirm a still picture until a user is made consent by providing and switching plural methods for displaying the picked-up image on a display means when the pickup/recording of the still picture is conducted while consecutive image pickup/recording is conducted.

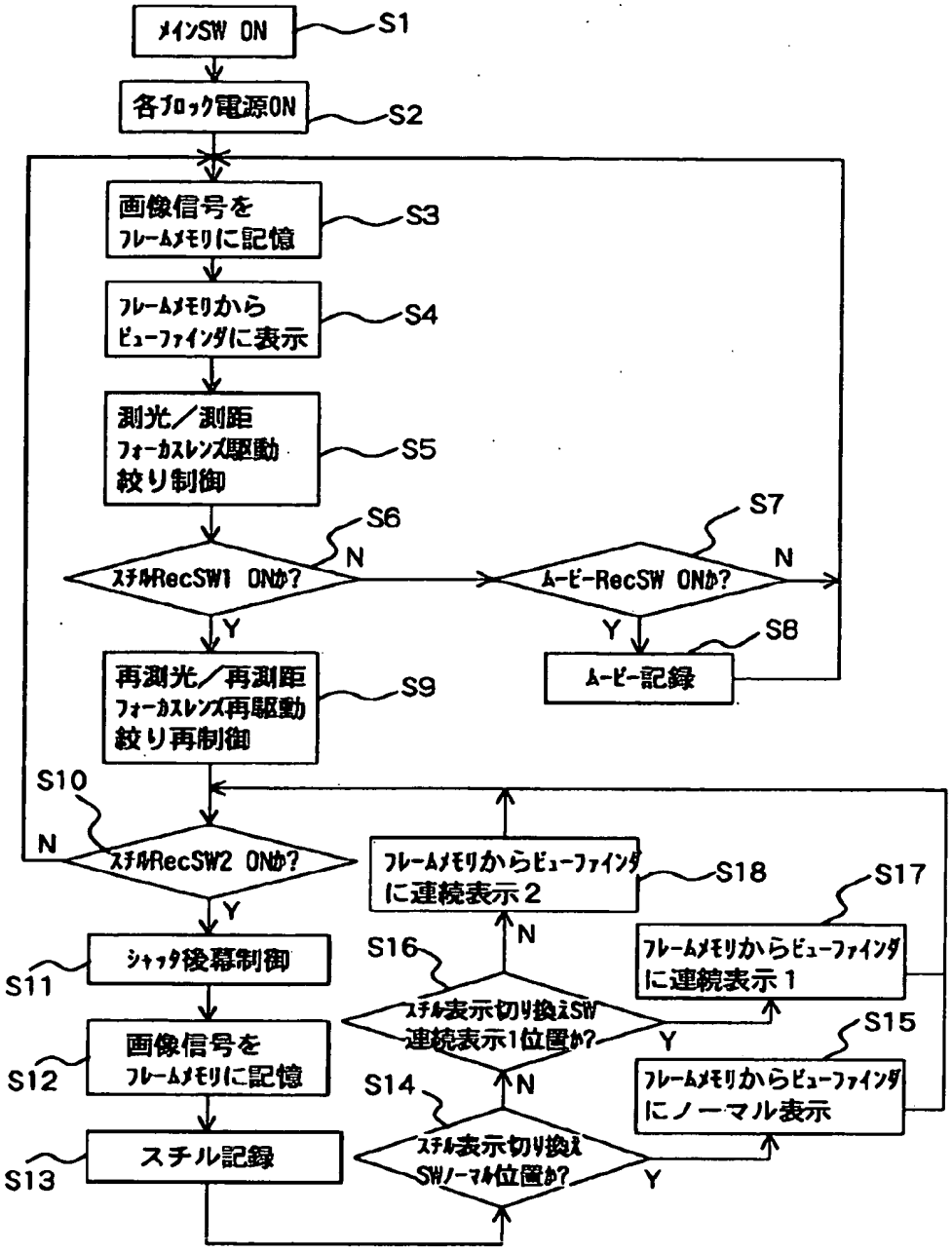
CONSTITUTION: An object signal fetched by still recording is recorded in a recording part 8, and the movie recording of it is continuously performed to the recording part in the same stream as the stream of display on a view finder 15. The subject fetched by still recording similarly to a normal position is displayed as two fields and until this subject becomes possible the subject just before still recording is displayed. Until a push button is operated for canceling the consecutive display of a still display changeover switch SW 19, the subject fetched by still recording is continuously displayed as two fields and displayed on the finder 15 as a small picture. This small picture is prepared inside a frame memory 12 for storing the fetched subject under the control of a small picture synthesizing circuit 13.



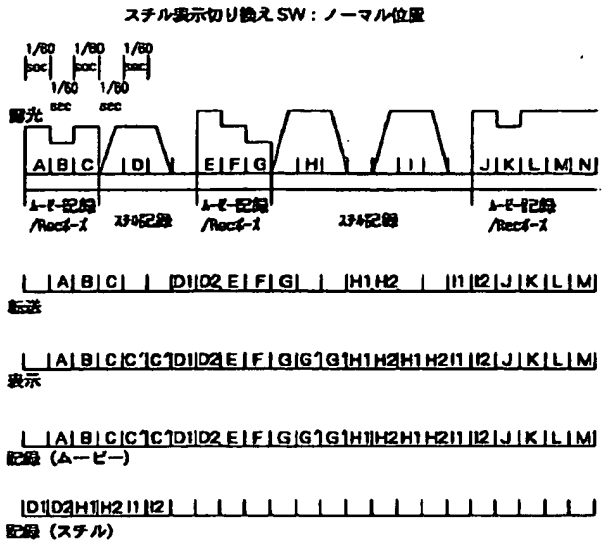
【図１】


1撮影レンズ
9
マイク
10
音声信号処理回路
2絞り兼用シャッタ
4CCD
6
撮像信号処理回路
7
A/D
8
記録部
15
A/D
11
CCD駆動回路
14
フレームメモリ
D/A
ビューファインダ
小画面合成回路
5
12
13
3絞り兼用シャッタ駆動装置
20 CPU
16メインSW
17ムービーRecSW
18スチルRecSW
19スチル表示切り換えSW
ノーマル/連続1/連続2
(切り換えボタン)
連続解除(プッシュボタン)

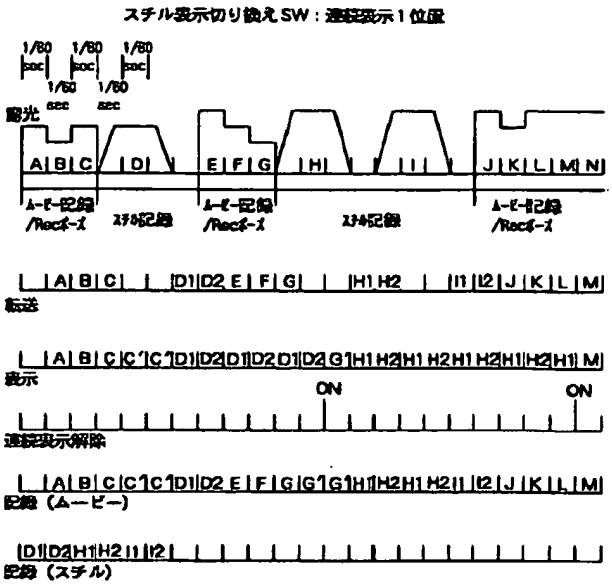
【図２】


メインSW ON
S1
各ブロック電源ON
S2
画像信号を
フレームメモリに記憶
S3
フレームメモリから
ビューファインダに表示
S4
測光／測距
フォーカスレンズ駆動
絞り制御
S5
スチルRecSW1 ONか?
S6
N
Y
ムービーRecSW ONか?
S7
N
Y
ムービー記録
S8
再測光／再測距
フォーカスレンズ再駆動
絞り再制御
S9
S10
スチルRecSW2 ONか?
N
Y
シャッタ後幕制御
S11
画像信号を
フレームメモリに記憶
S12
スチル記録
S13
フレームメモリからビューファインダ
に連続表示２
S18
スチル表示切り換えSW
連続表示1位置か?
S16
N
Y
フレームメモリからビューファインダ
に連続表示１
S17
スチル表示切り換え
SWノーマル位置か?
S14
N
Y
フレームメモリからビューファインダ
にノーマル表示
S15

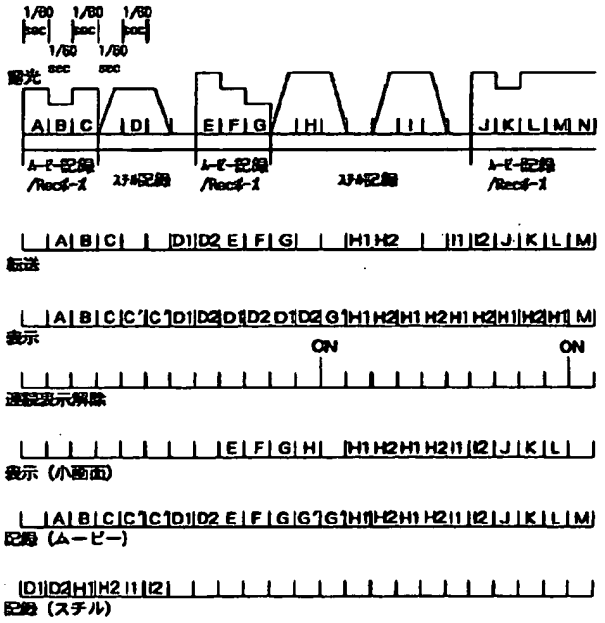
【図３】


スチル表示切り換えSW：ノーマル位置
1/60 sec
露光
A B C D E F G H I J K L M N
ムービー記録 /Rec ボーズ
スチル記録
転送
表示
記録（ムービー）
記録（スチル）

【図４】


スチル表示切り換えSW：連続表示１位置
1/60 sec
露光
A B C D E F G H I J K L M N
ムービー記録 /Rec ボーズ
スチル記録
転送
表示
ON
ON
連続表示解除
記録（ムービー）
記録（スチル）

【図５】


スチル表示切り換えSW：連続表示２位置
1/60 sec
露光
A B C D E F G H I J K L M N
ムービー記録 /Rec ボーズ
スチル記録
転送
表示
ON
ON
連続表示解除
表示（小画面）
記録（ムービー）
記録（スチル）

7-67001

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Inventor: Takashi Fujii
Applicant: Canon Inc.

Title of the Invention: IMAGE PICKUP APPARATUS

(54) [Title of the Invention] IMAGE PICKUP APPARATUS

(57) [Abstract]

[Purpose] An image pickup apparatus with which a photographer can confirm a photographed still picture image on a display image plane until he can satisfy.

[Constitution] 1 is a photographing lens for introducing a subject image onto a photoelectric conversion element (CCD), 2 a diaphragm-shutter, 4 a photoelectric conversion element, CCD, 5 a CCD drive circuit, 6 an image pickup signal processing circuit, 7 an A/D conversion circuit, 8 a recording section, 9 a microphone for collecting a surrounding sound, 10 a speech signal processing circuit for the sound collected by the microphone 9, 11 an A/D conversion circuit, 12 a frame memory, 13 a small image plane synthesis circuit, 14 a D/A conversion

circuit, 15 a viewfinder for displaying a signal sent from the D/A conversion circuit 14, 16 a main SW, 17 a movie Rec SW, 18 a still Rec SW, 19 a still switching SW and it is composed of a position SW for performing a mode switching of normal position/continuous display 1 position/continuous display 2 position, and a push button for continuous display release, and 20 a CPU.

【Claims】

【Claim 1】 An image pickup apparatus having display means capable of displaying an image pickup picture image and means capable of performing a switching between a continuous image pickup/recording and a still picture image pickup/recording, characterized by having plural methods of displaying the image pickup picture image to the display means in case where the still picture image pickup/recording is performed during the continuous image pickup/recording is performed, and having means capable of switching the plural display methods.

【Claim 2】 An image pickup apparatus having display means capable of displaying an image pickup picture image and means capable of performing a switching between a continuous image pickup/recording and a still picture image pickup/recording, characterized in that, when the still picture image pickup/recording is performed during the continuous image pickup/recording is performed, a picture image taken in the continuous image pickup/recording is displayed to the display means until a picture image taken in the still picture image pickup/recording becomes possible to be displayed to the display means, and the picture image taken in the still picture image pickup/recording is displayed to the display means at a point of time at which the picture image taken in the still picture image pickup/recording became possible to be displayed to the display means.

【Claim 3】 An image pickup apparatus having display means capable of displaying an image pickup picture image and means capable of performing a switching between a continuous image pickup/recording and a still picture image pickup/recording, characterized by having means by which, when the still picture image pickup/recording is performed during the continuous image pickup/recording is performed, a picture image taken in the continuous image pickup/recording can be displayed to the display means until a picture image taken in the still picture image pickup/recording becomes possible to be displayed to the display means, and the picture image taken in the still picture image pickup/recording can be displayed during a period intended by a photographer to the display means at a point of time at which the picture image taken in the still picture image pickup/recording became possible to be displayed to the display means.

【Claim 4】 An image pickup apparatus having display means capable of displaying an image pickup picture image and means capable of performing a switching between a continuous image pickup/recording and a still picture image pickup/recording, characterized by having means by which, when the still picture image pickup/recording is performed during the continuous image pickup/recording is performed, a picture image taken in the continuous image pickup/recording can be displayed to the display means until a picture image taken in the still picture

image pickup/recording becomes possible to be displayed to the display means, and the picture image taken in the still picture image pickup/recording can be displayed during a period intended by a photographer to the display means at a point of time at which the picture image taken in the still picture image pickup/recording became possible to be displayed to the display means, and by having means capable of displaying the picture image being taken in the continuous image pickup/recording at that point of time to the display means in a small image plane.

【Claim 5】 An image pickup apparatus having display means capable of displaying an image pickup picture image and means capable of performing a switching between a continuous image pickup/recording and a still picture image pickup/recording, characterized by having plural methods of displaying the image pickup picture image to the display means in case where the still picture image pickup/recording is performed during the continuous image pickup/recording is performed, and by having means capable of switching the plural display methods, and in that the plural display methods have a display method recited in any one of claims 2, 3 and 4.

【Detailed Description of the Invention】

【0001】

【Industrial Field of Application】 The present invention relates to an image pickup apparatus having a continuous photographing mode for continuously performing a field

photographing/recording and a still picture photographing mode for photographing/recording a frame picture and, in particular, to a picture image display method thereof.

【0002】

【Prior Art】 As an invention relating to the picture image display method in the image pickup apparatus having the continuous photographing mode for continuously performing the field photographing/recording and the still picture photographing mode for photographing/recording the frame picture, the present applicant has proposed Japanese Patent Publication No. 4998/1988.

【0003】 In a gist of this invention, a picture image signal repeatedly changed by image pickup means in the continuous photographing mode is temporarily stored, this is periodically renewed and displayed to display means, this renewal is stopped when the still picture photographing mode is selected, it is continued to display the picture image temporarily stored to the display means during the picture image taken in the still picture photographing mode is recorded and, after the recording has been completed, it is automatically returned to the continuous photographing mode and at the same time automatically returned from the still picture display to the continuous display.

【0004】

【Problems that the Invention is to Solve】Usually, in case where

the still picture photographing is performed in the course of the continuous photographing or in case where the still picture photographing is performed independently, from a nature of the still picture a photographer wishes to confirm a photographed picture image until he can satisfy by himself.

【0005】 However, in the above conventional example, there is a disadvantage that a display of the picture image obtained by the still picture photographing is released irrespective of an intention of the photographer.

【0006】 The invention has been made in order to solve such a problem of the prior art, and its object is to provide an image pickup apparatus with which the photographer can confirm, on a display image plane, the photographed picture image until he can satisfy.

【0007】

【Means for Solving the Problems】 In order to solve the problem, in claim 1, an image pickup apparatus of the invention is one having display means capable of displaying an image pickup picture image and means capable of performing a switching between a continuous image pickup/recording and a still picture image pickup/recording, characterized by having plural methods of displaying the image pickup picture image to the display means in case where the still picture image pickup/recording is performed during the continuous image pickup/recording is performed, and having means capable of

switching the plural display methods. Further, in claim 2, it is one characterized in that, when the still picture image pickup/recording is performed during the continuous image pickup/recording is performed, a picture image taken in the continuous image pickup/recording is displayed to the display means until a picture image taken in the still picture image pickup/recording becomes possible to be displayed to the display means, and the picture image taken in the still picture image pickup/recording is displayed to the display means at a point of time at which the picture image taken in the still picture image pickup/recording became possible to be displayed to the display means. Additionally, in claim 3, it is one characterized by having means by which the picture image taken in the still picture image pickup/recording can be displayed during a period intended by a photographer to the display means at a point of time at which the picture image taken in the still picture image pickup/recording became possible to be displayed to the display means. Moreover, in claim 4, it is one characterized by having means by which it is possible to display during a period intended by a photographer, and by having means capable of displaying the picture image being taken in the continuous image pickup/recording at that point of time to the display means in a small image plane. And, in claim 5, it is one characterized in that the display methods mentioned in claim 1 have a display method recited in any one of claims 2,

3 and 4.

【0008】

【Action】 In the invention, a photographer can confirm a photographed still picture image until he can satisfy by himself by the fact that it has display means capable of displaying a photographed picture image signal and means capable of performing a switching between a continuous photographing/recording and a still picture photographing/recording, and selectively has plural display methods of the display means in case where the still picture photographing/recording is performed during the continuous photographing/recording is performed, and moreover the display methods are provided with means by which the picture image taken in the still picture photographing/recording can be displayed during a period intended by the photographer to the display means.

【0009】

【Embodiment】 Fig. 1 is a constitutional block diagram of an image pickup apparatus capable of performing a still/movie photographing, which is one embodiment of the invention.

【0010】 1 is a photographing lens for introducing a subject image onto a photoelectric conversion element (CCD). This photographing lens may have or may not have a zooming function and an automatic focusing function. 2 is a diaphragm-shutter which acts as a diaphragm for controlling a light quantity of

the subject image introduced onto the CCD to a suitable light quantity at a movie photographing time and which acts, in addition to the diaphragm action, as a back membrane of a shutter at a still photographing time. 3 is a diaphragm-shutter drive device for driving the diaphragm-shutter 2 in accordance with a designation of a CPU. 4 is a photoelectric conversion element, CCD, for converting the subject image having been image-formed by the photographing lens into an electric signal. 5 is a CCD drive circuit for drive-controlling an accumulation, a transfer and the like of an electric charge of the CCD 4 in accordance with the designation of the CPU. 6 is an image pickup signal processing circuit for performing a formation of luminance signal and chrominance signal basing on an output signal from the CCD 4 and another signal processing. 7 is an A/D conversion circuit for converting an analog signal sent from the image pickup signal processing circuit 6 and a speech signal processing circuit into a digital signal. 8 is a recording section for converting the digital signal outputted from the A/D conversion circuit 7 into a format proportionating to a recording medium/recording system to thereby record it to the recording medium. 9 is a microphone for collecting a sound from one direction or a specified direction or a surrounding sound. 10 is a speech signal processing circuit for applying a predetermined processing to the sound collected by the microphone 9. 11 is

an A/D conversion circuit for converting an analog signal outputted from the image pickup signal processing circuit 6 into a digital signal and sending it to a frame memory. 12 is a frame memory capable of storing, in plural sheets, the digital image signal outputted from the A/D conversion circuit 11. 13 is a small image plane synthesis circuit for exchanging a signal with the frame memory 12 and synthesizing small image planes when displaying to a viewfinder.

【0011】 14 is a D/A conversion circuit for converting a digital image signal sent from the frame memory 12 into an analog signal in order to display it to the viewfinder. 15 is a viewfinder for displaying a signal sent from the D/A conversion circuit 14. 16 is a main SW for performing a designation of ON/OFF of an electric source of the present image pickup apparatus. 17 is a movie Rec SW for performing a designation of ON/OFF of the movie photographing. 18 is a still Rec SW constituted by SW1/SW2 for performing a designation of the still photographing. 19 is a still display switching SW for designating how to display a photographed still picture onto the viewfinder 15, and it is composed of a position SW for performing a mode switching of normal position/continuous display 1 position/continuous display 2 position and a push button for a continuous display release. 20 is a CPU including a clock generating function, which performs a centralized control of each block of the present photographing apparatus.

【0012】 Fig. 2 shows a flowchart at a still photographing /movie photographing time in the photographing apparatus having the constitution of Fig. 1, and it is explained below. First, if the main SW 16 is made ON (S1), the electric source is fed to necessary blocks of the photographing apparatus (S2). On this occasion, the electric source is of course fed also to the viewfinder 15, and also the diaphragm-shutter 2 is controlled to a preliminarily set aperture. Next, an information of the subject image having been image-formed on the CCD 4 by the photographing lens 1 is taken into the image pickup signal processing circuit 6 by an electronic shutter of the CCD 4 as an electric signal of a 1/60 second field rate, and it is converted into the digital signal by the A/D conversion circuit 11 and stored to the frame memory 12 (S3). This stored signal is held in the frame memory 12 and , at the same time, converted again into the analog signal by the D/A conversion circuit 14, and thereafter displayed to the viewfinder 15 (S4). Next, by a control of the CPU 20, an aperture of the diaphragm-shutter 2 is feedback-controlled such that a brightness of the signal taken into the image pickup signal processing circuit 6 by the electronic shutter of the CCD 4 becomes suitable. Further, at the same time, a focus lens (not shown) in the photographing lens is controlled by a focus lens drive device (not shown) such that a high frequency component of the signal taken becomes a peak, i.e., a so-called mountaineering system automatic focus

control is performed (S5).

【0013】 Next, the CPU 20 checks whether or not the SW1 of the still Rec SW 18 is made ON (S6). Here, when the SW1 is ON, for a still photographing preparation, a higher accuracy re-photometry/re-ranging different from a movie photographing time is performed, the focus lens is driven again to a just focus position, and a diaphragm aperture of the diaphragm-shutter 2 is controlled again to a diaphragm aperture conforming to a preliminarily set program diagram (S9). Here, if the SW2 of the still Rec SW 18 is made ON (S10), an exposure of a still picture photographing, from which an electric charge of the CCD 4 has been discharged, is started with a preliminarily set timing, and the exposure is finished by a back membrane drive, of the diaphragm-shutter 2, conforming to the program diagram (S11). A subject signal taken here is transferred to the image pickup signal processing circuit 6 by the frame rate and, after having been converted into a digital signal by the A/D conversion circuit 11, stored to the frame memory 12 (S12) and, at the same time, a still recording is completed by the fact that it is converted into a digital signal by the A/D conversion circuit 7 and recorded to the recording section 8 (S13).

【0014】 Here, some explanation is made about the field rate and the frame rate. For example, like an NTSC television system, a picture image composed of a vertical scan for one time of

an interlace scan is a picture image of the field rate, and a picture image composed of the vertical scans for two times is a picture image of the frame rate.

【0015】 Next, the CPU 20 checks whether or not a position of the still display switching SW is a normal position (S14). Here, when it is the normal position, a display of the subject signal stored in the frame memory 12 to the viewfinder 15 is displayed by a display method for a normal display explained later in detail (S15). Further, here, when it is not the normal position, the CPU 20 checks whether or not a position of the still switching SW is the continuous display 1 position (S16). Here, when it is the continuous display 1 position, a display of the subject signal stored in the frame memory 12 to the viewfinder 15 is displayed by a display method for a continuous display 1 explained later in detail (S17). Further, here, when it is not the continuous display 1 position, a display of the subject signal stored in the frame memory 12 to the viewfinder 15 is displayed by a display method for a continuous display 2 explained later in detail (S18).

【0016】 Next, in the S6, in case where the SW1 of the still Rec SW 18 is not made ON, the CPU 20 checks whether or not the movie Rec SW is made ON (S7). Here, if the movie Rec SW is made ON, the subject signal taken into the image pickup signal processing circuit 6 by the electronic shutter of the CCD 4 with the 1/60 second field rate is converted into a digital

signal by the A/D conversion circuit 7, and thereafter a movie recording is performed to the recording section 8.

【0017】 Also during the movie recording, it is successively taken into the image pickup signal processing circuit 6 by the electronic shutter of the CCD 4 as an electric signal of the 1/60 second field rate. In order that a brightness of this signal taken into the image pickup signal processing circuit 6 by the electronic shutter of the CCD 4 becomes suitable, an aperture of the diaphragm-shutter 2 is feedback-controlled, and the focus lens (not shown) in the photographing lens is feedback-controlled by the focus lens drive device (not shown) such that that the high frequency component of the taken signal becomes a peak.

【0018】 As understood also from the flowchart of Fig. 2, if the still Rec SW 18 is operated under a state that a movie recording is being performed (state that the movie Rec SW is made ON), a still recording is performed prior to the movie recording, and it follows that, if the still recording is finished, the movie recording is performed again.

【0019】 Next, it is explained about how a photographed image is displayed to the display device/viewfinder 15 at the photographing time, including a display method of the normal display/continuous display 1/continupous display 2.

【0020】 Although mentioned before, the electric source is charged in the S2, and the subject image taken from the CCD

4 with the 1/60 second field rate is field-displayed to the viewfinder 15 under a state of being delayed by 1/60 second (it is a so-called Rec pose state of usual cam coder) (S4). Further, at the movie recording time, it is the same as a Rec state of the usual cam coder. Here, there is recited as "displayed under a state of being delayed by 1/60 second", but the time of 1/60 second changes owing to a circuit constitution and capabilities of the CPU 20, etc., and it is not limited to 1/60 second especially.

【0021】 Next, it is explained about a display timing of the viewfinder 15 in case where the still Rec SW 18 is operated from the Rec pose state and the still recording is performed, or in case where the still Rec SW 18 is operated under a state that the movie recording is being performed (state that the movie Rec SW is made ON) and the still recording is performed prior to the movie recording.

【0022】 A display form at this time is different depending on a mode position of the still display switching SW 19. First, a timing chart when the mode position of the still display switching SW 19 is the normal position is shown in Fig. 3 and explained.

【0023】 At the movie recording or Rec pose time, a subject image exposed (exposure A, B, C, E, F, G, J, K, L, M, N) by the electronic shutter of 1/60 second is transferred (transfer A, B, C, E, F, G, J, K, L, M) to the image pickup signal processing circuit

6 under a state of being delayed by 1/60 second with the field rate. At the movie recording or Rec pose time, it is sent to the A/D conversion circuits 7, 11 for a recording and a display to the viewfinder 15, and a signal sent to the A/D conversion circuit 11 is accumulated to the frame memory 12 and, at the same time, passes through the D/A conversion circuit 14 and is displayed to the viewfinder 15 under the state of being delayed by 1/60 second from the exposure. At the movie recording time, it is simultaneously recorded to a movie recording region of the recording section 8. When the still recording is performed under such a state, the electric charge of the CCD 4 is discharged with a preliminarily set timing, an exposure of the still picture photographing is started, and the exposure is performed by a back membrane drive of the diaphragm-shutter 2 conforming to the preliminarily set program diagram (exposure D, H, I). This exposed subject image is transferred to the image pickup signal processing circuit 6 with the frame rate after the CCD 4 has been shielded by the back membrane (numerals 1 and 2 of the transfer D1, D2, H1, H2, I1, I2/D1, D2 etc. denote a 1st field and a 2nd field of the picture image taken with the frame rate).

[0024] In this manner, at the still photographing time, since the transfer of the signal is not performed during the exposure in order to take the subject image with the frame rate, the subject image just before the still recording is displayed (the

prime (') in display C', G' / C', G' etc. denotes the fact that the display/recording for C, D is performed again) until the subject image taken in the still recording becomes possible to be displayed in order that the display to the viewfinder 15 is not interrupted at the still recording exposure time when the exposure time is longer than 1/60 second, and at a point of time at which the subject image taken in the still recording became possible to be displayed, the subject image of the frame rate taken in the still recording is successively displayed as two fields until a subject image next taken becomes possible to be displayed and, at a point of time at which the subject image next taken became possible to be displayed, that subject image is displayed.

【0025】 Here, it is explained about how the movie recording and the still recording are performed to the recording section 8.

【0026】 A subject signal taken in the still recording is still-recorded to the recording section 8 with the frame rate (recording still - D1, D2, H1, H2, I1, I2) and, as the movie recording, it is continuously movie-recorded to the recording section 8 by the same flow as the flow displayed to the viewfinder 15 (recording movie).

【0027】 Next, a timing chart when the mode position of the still display switching SW 19 is the continuous display 1 position is shown in Fig. 4 and explained.

【0028】 Similarly to the normal position, the subject image,

of the frame rate, taken in the still recording is displayed as two fields, and the subject image just before the still recording is displayed until the subject image taken in the still recording becomes possible to be displayed. Here, the display taken in the still recording is one continuously displayed until a push button for a continuous display release of the still switching SW is operated (display D1, D2).

【0029】Next, if the push button for a continuous display release of the still display switching SW is operated, the subject image taken and being transferred at that point of time is continuously displayed.

【0030】 Here, as to how the movie recording and the still recording are performed to the recording section 8, it is the same as when it is the normal position.

【0031】Next, a timing chart when the mode position of the still display switching SW 19 is the continuous display 2 position is shown in Fig. 5 and explained.

【0032】Similarly to the normal position, the subject image, of the frame rate, taken in the still recording is displayed as two fields, and the subject image just before the still recording is displayed until the subject image taken in the still recording becomes possible to be displayed.

【0033】Further, similarly to when it is the continuous display 1 position, the subject image, of the frame rate, continuously taken in the still recording is continued to be displayed as

two fields until the push button for the continuous display release of the still display switching SW is operated, but the subject image taken during that period is simultaneously displayed on the viewfinder 15 as a small image plane. This small image plane production is made in the frame memory 12 for accumulating the taken subject image by a control of the small picture synthesis circuit 13.

【0034】 Here, as to how the movie recording and the still recording are performed to the recording section 8, it is the same as when it is the normal position.

【0035】

【Effect of the Invention】 As explained above, the invention has made it possible to provide an image pickup apparatus with which a photographer can confirm a photographed still picture image until he can satisfy by himself by the fact that it has display means capable of displaying a photographed picture image signal and means capable of performing a switching between a continuous photographing/recording and a still picture photographing/recording, and selectively has plural display methods of the display means in case where the still picture photographing/recording is performed during the continuous photographing/recording is performed, and moreover the display methods are provided with means by which the picture image taken in the still picture photographing/recording can be displayed during a period intended by the photographer to

the display means.

【Brief Description of the Drawings】

【Fig. 1】 It is a constitutional block diagram of an image pickup apparatus of one embodiment of the invention.

【Fig. 2】 It is a flowchart showing an operation at a photographing time of the image pickup apparatus of one embodiment of the invention.

【Fig. 3】 It is a timing chart of a picture image display to a display section of the image pickup apparatus of one embodiment of the invention.

【Fig. 4】 It is a timing chart of the picture image display to the display section of the image pickup apparatus of one embodiment of the invention.

【Fig. 5】 It is a timing chart of the picture image display to the display section of the image pickup apparatus of one embodiment of the invention.

【Description of the Reference Numerals】

1 photographing lens

2 diaphragm-shutter

4 photoelectric conversion element (CCD)

6 image pickup signal processing circuit

8 recording section

9 microphone

12 frame memory

15 display device (viewfinder)

19 still display switching SW

AMENDMENT

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【Claims】

【Claim 1】 An image pickup apparatus characterized by having display means capable of displaying an image pickup picture image, switching means for switching a continuous image pickup and a still picture image pickup, and control means by which, when the still picture image pickup is performed during the continuous image pickup is performed by the switching means, a picture image taken in the continuous image pickup just before the still picture image pickup is performed is displayed to the display means until a picture image taken in the still picture image pickup becomes possible to be displayed to the display means and the picture image taken in the still picture image pickup is displayed to the display means from a point of time at which the picture image taken in the still picture image pickup became possible to be displayed to the display means.

【Claim 2】 An image pickup apparatus set forth in claim 1, characterized in that the control means displays the picture image taken in the still picture image pickup during a period intended by a photographer to the display means at a point of time at which the picture image taken in the still picture image pickup became possible to be displayed to the display means.

【Claim 3】 An image pickup apparatus set forth in claim 1, characterized in that the picture image taken in the still picture image pickup/recording is displayed to the display means from a point of time at which the picture image taken in the still picture image pickup became possible to be displayed to the display means, and the picture image being taken at present in the continuous image pickup is displayed to the display means in a small picture plane.

【0007】

【Means for Solving the Problems】 In order to solve the problem, in claim 1, the invention is an image pickup apparatus characterized by having display means capable of displaying an image pickup picture image, switching means for switching a continuous image pickup and a still picture image pickup, and control means by which, when the still picture image pickup is performed during the continuous image pickup is performed by the switching means, a picture image taken in the continuous image pickup just before the still picture image pickup is performed is displayed to the display means until a picture image taken in the still picture image pickup becomes possible to be displayed to the display means and the picture image taken in the still picture image pickup is displayed to the display means from a point of time at which the picture image taken

in the still picture image pickup became possible to be displayed to the display means. Further, in claim 2, it is an image pickup apparatus set forth in claim 1, characterized in that the control means displays the picture image taken in the still picture image pickup during a period intended by a photographer to the display means at a point of time at which the picture image taken in the still picture image pickup became possible to be displayed to the display means. Additionally, in claim 3, it is an image pickup apparatus set forth in claim 1, characterized in that the picture image taken in the still picture image pickup/recording is displayed to the display means from a point of time at which the picture image taken in the still picture image pickup became possible to be displayed to the display means, and the picture image being taken at present in the continuous image pickup is displayed to the display means in a small picture plane.

FIG. 1

1 PHOTOGRAPHING LENS

2 DIAPHRAGM-SHUTTER

3 DIAPHRAGM-SHUTTER DRIVE DEVICE

5 CCD DRIVE CIRCUIT

6 IMAGE PICKUP SIGNAL PROCESSING CIRCUIT

8 RECORDING SECTION

9 MICROPHONE

10 SPEECH SIGNAL PROCESSING CIRCUIT

12 FRAME MEMORY

13 SMALL IMAGE PLANE SYNTHESIS CIRCUIT

15 VIEWFINDER

16 MAIN SW

17 MOVIE Rec SW

18 STILL Rec SW

19 STILL DISPLAY SWITCHING SW

NORMAL/CONTINUOUS 1/CONTINUOUS 2

(SWITCHING BUTTON)

CONTINUOUS RELEASE (PUSH BUTTON)

FIG. 2

S1 MAIN SW ON

S2 EACH BLOCK ELECTRIC SOURCE ON

S3 STORE PICTURE IMAGE SIGNAL TO FRAME MEMORY

S4 DISPLAY FROM FRAME MEMORY TO VIEWFINDER

S5 PHOTOMETRY/RANGING

FOCUS LENS DRIVE

DIAPHRAGM CONTROL

S6 IS STILL Rec SW1 ON ?

S7 IS MOVIE ReC SW ON ?

S8 MOVIE RECORDING

S9 RE-PHOTOMETRY/RE-RANGING

FOCUS LENS RE-DRIVE

DIAPHRAGM RE-CONTROL

S10 IS STILL Rec SW2 ON ?

S11 SHUTTER BACK MEMBRANE CONTROL

S12 STORE PICTURE IMAGE SIGNAL TO FRAME MEMORY

S13 STILL RECORDING

S14 STILL DISPLAY SWITCHING

IS SW NORMAL POSITION ?

S15 NORMAL DISPLAY FROM FRAME MEMORY TO VIEWFINDER

S16 IS STILL DISPLAY SWITCHING SW CONTINUOUS DISPLAY 1

POSITION ?

S17 CONTINUOUS DISPLAY 1 FROM FRAME MEMORY TO VIEWFINDER

S17 CONTINUOUS DISPLAY 2 FROM FRAME MEMORY TO VIEWFINDER

FIG. 3 - FIG. 5

1 STILL DISPLAY SWITCHING SW : NORMAL POSITION

2 STILL DISPLAY SWITCHING SW : CONTINUOUS DISPLAY 1 POSITION

3 STILL DISPLAY SWITCHING SW : CONTINUOUS DISPLAY 2 POSITION

4 EXPOSURE

5 TRANSFER

6 DISPLAY

7 RECORDING (MOVIE)

8 RECORDING (STILL)

9 CONTINUOUS DISPLAY RELEASE

10 DISPLAY (SMALL IMAGE PLANE)

11 MOVIE RECORDING

/Rec POSE

12 STILL RECORDING